**Template | Unit Enhancement**

***EXPLANATION & ARGUMENTATION***

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**Background Information**

**Instructional Materials Title: Circuits and Pathways**

**Publication Date: STC: 1997,2003 Instructional Guide: 2009**

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**Date Developed: August 23, 2013**

**High Leverage Lesson (Learning Experience 12 Assessment: Fair Test Conclusion):**

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**Rationale**

* Altering conclusion writing to a CER format
* Straightforward and focused on specific scientific concept

**4-5 INQ G Explain:**

* **Scientific explanations emphasize evidence, have logically consistent arguments, and use known scientific principles, models, and theories**

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***Explanation* Lesson Enhancement**

**Overview**

· **Identification of where within the High Leverage Lesson to insert enhancement**

· **Key instructional strategies and tools needed**

**Part 1: Lesson Modifications to Lead Up to *Explanation* Experience**

Experimental Question altered: What is the effect of the gage of the wire on the brightness of the bulb?

Claim: The gauge of the wire affects the brightness of the bulb.

Evidence: According to the evidence in the data table, the larger gauge wire had a median brightness of \_\_\_\_\_. The small gauge wire had a median brightness of \_\_\_\_\_\_. This shows a difference of \_\_\_\_\_\_ in the brightness meter using the two different gauges.

Reasoning (as individual extension or whole group conversation): What do you think causes this difference? Why would a larger gauge/diameter wire increase the brightness of the bulb?

Note: Scientific concept we are trying to address is increased/more (not faster, not stronger) current flow.

**Part 2: *Explanation* Learning Sequence**

**Part 3-A: Describe Assessment Task**

*Include the* ***question****,* ***evidence*** *students will use, and* ***scientific concepts*** *students will use in their reasoning.*

*Conductors are materials that allow electric current to flow. What materials are conductors of electric current?*

*Note to teachers: Add a column to the data table in lesson 5 headed as “MATERIAL OF THE ITEM”. This will help students to process their data.*

**Part 3-B: Assessment Rubric**

|  |  |  |
| --- | --- | --- |
|  | **Claim**  *A statement or conclusion that answers the original question/ problem* | **Evidence**  *Scientific data that supports the claim. Data needs to be appropriate and sufficient to support the claim* |
| 0 | Does not make a claim, or makes an inaccurate claim like, “The gauge does not effect the brightness of the bulb.” | Does not provide evidence, or only provides inappropriate or vague evidence, like “The data show me that.” Or “The table is evidence.” |
| 1 |  | Provides 1 of the following:   * The brightness of the thick gauge wire was \_\_\_\_\_. * The brightness of the thin gauge wire was \_\_\_\_\_. * The difference between the brightness was \_\_\_\_\_\_.   May also include inappropriate evidence. |
| 2 | Makes an accurate but vague claim, like “It gets brighter.” | Provides 2 of the following:   * The brightness of the thick gauge wire was \_\_\_\_\_. * The brightness of the thin gauge wire was \_\_\_\_\_. * The difference between the brightness was \_\_\_\_\_\_.   May also include inappropriate evidence. |
| 3 | Makes an accurate and complete claim, like “Changing the gauge of the wire changes/ affects the brightness of the bulb.” | Provides all of the following:   * The brightness of the thick gauge wire was \_\_\_\_\_. * The brightness of the thin gauge wire was \_\_\_\_\_. * The difference between the brightness was \_\_\_\_\_\_.   May also include inappropriate evidence. |

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**Additional Information**

NOTES

· Information that will be useful when teaching this lesson

- Resources that will be useful

- Scaffolds that students will use